

## **FORCED AIR HEATED GUTTER SYSTEM**

### **BACKGROUND OF THE INVENTION**

- [1] The present invention relates to a gutter system, and more particularly to a molded gutter, which includes passages for forced hot air thawing.
- [2] It is commonly recognized that snow presents a particularly troublesome problem for buildings in colder climates. Snow usually accumulates on a roof and as the snow melts, water from the snow as it melts freezes in the gutters and may prevent water drainage from the roof. The reduction in drainage eventually may result in a complete blockage. Once the drainage from any portion of a roof is thus blocked, water may eventually back up under the roof and may then leak into the building.
- [3] Various conventional gutter heating arrangements are known. One system utilizes electrical systems that are draped within the gutter to melt accumulated ice and snow. Other systems utilized forced air hoses in a manner similar to the electrical arrangements. Disadvantageously, these conventional systems are installed into existing gutters and may create various aesthetic, routing, and installation difficulties. Furthermore, routing the heating elements within the gutter minimizes flow through the gutter and may create additional traps for debris, which may eventually disable liquid flow through the gutter.
- [4] Accordingly, it is desirable to provide an uncomplicated gutter system that minimizes accumulation of ice and snow.

### **SUMMARY OF THE INVENTION**

- [5] The forced hot-air gutter thawing system includes a multiple of gutter sections which each include a multiple of molded in hot air flow passages adjacent a liquid passageway. A hot air source, such as a conventional hot-air type furnace, communicates hot air through a manifold that distributes hot air through the gutter sections.
- [6] Each gutter section is a plastic molded component within which the passages are directly molded. The passages are preferably located within a bottom portion of the gutter section below a conventional liquid passage arranged along the length thereof. The passages are redundant in that one or more passages may be utilized as intake passages and one or

more passages may be utilized as return passages depending upon which are in communication with the manifold.

[7] The gutter sections are assembled together through heat staking or other fastening arrangement such that the gutter sections may be combined in a modular manner to provide a gutter system for various dwellings.

[8] The present invention therefore provides an uncomplicated gutter system that minimizes accumulation of ice and snow.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[9] The various features and advantages of this invention will become apparent to those skilled in the art from the following detailed description of the currently preferred embodiment. The drawings that accompany the detailed description can be briefly described as follows:

[10] Figure 1 is a general perspective view an dwelling for use with a forced hot-air gutter thawing system according to the present invention;

[11] Figure 2 is a sectional view of a gutter section;

[12] Figure 3 is an schematic view of a manifold; and

[13] Figure 4 is a schematic top view of multiple gutter sections in a representational system arrangement.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

[14] Figure 1 illustrates a general perspective view of a forced hot air gutter thawing system 10. The gutter thawing system 10 is mounted to a structure 12 as is generally understood. It should be understood that although a particular structure and simplified gutter system component is disclosed in the illustrated embodiment, other arrangements will benefit from the instant invention.

[15] The system 10 generally includes a multiple of gutter sections 14 which each include a multiple of molded in passages 16 (Figure 2). A hot air source 18, such as a conventional hot air type furnace, communicates hot air through a manifold 20 that distributes hot air

through the gutter sections 14. The manifold 20 is preferably arranged to permit a multiple of pneumatic communication paths from the source to the gutter sections 14.

[16] Preferably, a fan 22 or the like provides the hot air at a pressure above atmosphere to the manifold 20. The hot air is communicated through the gutter sections 14 and preferably returned to the manifold 20. The hot air is recirculated such that a minimal of hot air is lost and the system efficiency is maximized. It should be understood that a multiple of recirculation circuits may be utilized within a single dwelling. Preferably, the manifold 20 includes a pneumatic return section 24 and a pneumatic output section 26 (Figure 3) with a multiple of connectors 25 to accommodate a multiple of circuits through selective connection thereto.

[17] Referring to Figure 2, one gutter section is illustrated in cross-section. Preferably, each gutter section 14 is a plastic molded component within which the passages 16 are directly molded. The passages 16 are preferably located within a bottom portion 17 of the gutter section 14 below a conventional liquid passage L along the length thereof. The passages 16 are preferably redundant in that one or more passages may be utilized as intake passages and one or more passages may be utilized as return passages depending upon which are in communication with the manifold 20.

[18] Referring to Figure 4, a multiple of gutter sections 14a-14c are illustrated. It should be understood that although three sections are illustrated, the general schematic arrangement of a much more complicated gutter systems, which is built through modular arrangements of these and other gutter sections, will be understood by one of skill in the art with the benefit of the teaching provided herein. The gutter sections 14a-14c are preferably assembled together through heat staking h or other fastening arrangement such that the gutter sections may be combined in a modular manner to provide a gutter system for various dwellings.

[19] The gutter section 14a is a communication section which permits communication to the manifold 20 by selectively connection of a conduit 28i such as a hose or pipe to connectors 30 which are located therein. The connectors 30 may be threaded or provide other connection to the manifold 20 though conduits 28. A conduit 28i provides communication between the pneumatic input section 24 of the manifold 20 and a connector 30i to provide a forced hot air flow into the one or more passages 16i. Another conduit 28o

is connected to a connector 30o to provide a return from the section 14a to provide a return of the worked forced hot-air air from the one or more passages 16o to the pneumatic return section 26a of the manifold 20 and an return from one or more passages 16o.

[20] The gutter section 14b is a relatively straight section typically installed along a roof edge or the like. The gutter section 14b includes generally linear passages 16o, 16i. The gutter section 14b can be of any length, shape, and size.

[21] The gutter section 14c is a return section which operates as an end cap or turn-around gutter section. The gutter section 14c includes a multiple of curved passages 16c which connect one or more input passages 16i to one or more output passages 16o. The gutter section 14c may alternatively or additionally plug one or more passages.

[22] It should be understood that various passage arrangements will benefit from the present invention and that although only the three sections 14a-14c are illustrated other sections of other configuration will benefit from the instant invention and increase the modularity of the system.

[23] The foregoing description is exemplary rather than defined by the limitations within. Many modifications and variations of the present invention are possible in light of the above teachings. The preferred embodiments of this invention have been disclosed, however, one of ordinary skill in the art would recognize that certain modifications would come within the scope of this invention. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described. For that reason the following claims should be studied to determine the true scope and content of this invention.